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also through efforts expressly directed to economic and social ends, emphasis has been laid in these latter days as never before. This tendency is bound to continue; and the benefits that will flow from our universities in these ways are quite beyond calculation. But it is not difficult to imagine these results obtained by other instrumentalities, if the institution we call the university were not historically in existence, and ready to furnish them. The thing that the university alone can supply—the thing, at all events, for which neither history nor imagination suggests a possible substitute—is the preservation of high intellectual ideals, the maintenance of noble traditions of science and learning. Of these ideals and traditions university presidents, however masterful, university administrators, however efficient, can not possibly serve as the custodians. It is upon the men whose business is not to administer but to teach and to learn, not to manage but to investigate and to inspire, that we must depend for the keeping alive of the sacred fire. And if we read aright the announcement of its purposes, it is to the strengthening of this conception of the professor's status that the new association is above all to be devoted.—New York *Evening Post*.

#### SCIENTIFIC BOOKS

*The Scientific Work of Morris Loeb.* Edited by THEODORE W. RICHARDS. Harvard University Press. 1913.

The many friends of Dr. Morris Loeb will feel very grateful to Professor Theodore W. Richards for arranging this volume. It is the best monument yet erected to the memory of a man whose life was an inspiration to all who knew him.

The first part of the volume is a collection of some lectures and addresses referring to chemical research, the Chemists' Club building, the chemical museum and kindred subjects. The great idealism of Dr. Morris Loeb, combined with his practical, well-organized methods and conceptions, are well illustrated by some passages:

Pages 95-96: "... How, then, can the

status of the independent commercial chemist be raised in our city? By giving him a central rally-point; a home that proves to the layman that his is a skilled profession, not a mere job-hunting trade; a place where the manufacturer or merchant can find the man he wants without a rambling search through the city directory. Doubtless, some of our colleagues are so well known that all the business comes to them which they can handle. But the many additional independent chemists, whom our commercial situation demands, can only establish themselves if they can secure proper laboratory facilities, without hiring attics in tumble-down rookeries. . . ."

Page 96: "... Every year scores of New Yorkers graduate in chemistry from our local institutions and return from years of protracted study in other American and European institutions. They are enthusiastic for research; in completing their theses they have laid aside definite ideas for subsequent experimentation; but they have no laboratory. While waiting to hear from the teachers' agency where they have registered, while carrying on desultory correspondence with manufacturers who *may* give them a chance, they do not venture upon expenditure of time and money to fit out a private laboratory, which they may be called upon to quit any minute upon the appearance of that desired appointment. Often necessity or tedium will cause them to accept temporary work of an entirely different character and indefinitely postpone the execution of the experiments which they had mapped out. Who will estimate the loss of scientific momentum, the economic and intellectual waste, which this lack of laboratory facilities for the graduate inflicts upon New York, as compared with Berlin, Vienna, Paris and London? Either our universities and colleges, or private enterprise, should provide temporary desk-room for the independent research chemist."

Pages 98-99-100: "... There is still another point, however, in which the American chemist is at a great disadvantage as compared with the European; the ease of securing material for his research and of comparing his

results with those of others. In Europe, especially in Germany, research is never seriously delayed by lack of a needed preparation, whereas, none of our supply houses carry a full stock of chemicals. To obtain a single gram of some particular substance, needed for a few preliminary tests, frequently causes weeks of delay, as well as the disproportionate custom house and brokerage expenses involved in the importation of small quantities. Besides, owing to the better centralization of scientific laboratories in Europe, and the existence in each case of a fairly complete set of specimens accumulated in the researches of large numbers of academic investigators, it is comparatively easy to obtain by correspondence research material or typical specimens for comparison. In this country, on the other hand, laboratories are scattered throughout the numerous colleges and universities, and there are no established rules by which specimens must be deposited with the laboratory. In smaller laboratories, especially, the chances of preservation after the departure of the investigator are not very good. It would be, consequently, very much more difficult to obtain such specimens here. I would suggest, therefore, that a chemical museum be established in New York, to perform for the American chemists the functions that the Smithsonian Institution so admirably carries on for the benefit of American naturalists. This museum would not attempt to be a popular show-place, but would embody, in the first place, as complete a collection as possible of chemically pure materials of the rarer kinds, so as to supplement, but not in any manner compete with, the stock of commercial supply-houses. Any scientific investigator would be entitled to borrow or purchase material required for immediate experimentation, and all used articles would be replaced as quickly as possible.

In the second place, it would be a depository for specimens of new substances obtained in American research. Every chemist would be invited to send to the museum a small quantity of each substance newly prepared by him, not, indeed, as an evidence of the good faith

of his investigation, but, rather, to enable future workers to obtain such material, either for comparison, or for further experimentation with the least possible delay. Many substances that are now carried away from universities by students who subsequently abandon chemical research, or which belong to the families of deceased chemists who do not know what to do with them, would thereby be rescued from oblivion, and might ultimately become of the greatest value for a special purpose.

Thirdly, this museum would invite chemical manufacturers to send standard samples of their products, and thereby facilitate the commercial relations between consumer and manufacturer.

To such a museum there could be attached a competent staff of workers for the preparation of samples not otherwise available. In the analysis of samples submitted as official standards, we should have the beginning of that *Chemische Reichsanstalt* which is now the chief object to which German chemists are directing their attention."

Page 126: "... We have detailed some of the more striking advantages which the new building is expected to confer upon the chemical profession as a whole, as well as upon its individual votaries; is it an exaggeration to characterize the constitution of the Chemists' Building Company itself as a new era in the chemical industry of our country? In scanning the list of shareholders, we find representatives of nearly every important concern, or even the larger companies themselves; but that this is not a 'trust,' in the sense so obnoxious to the yellow journalist, is demonstrated by the conditions of the partnership. No shareholder can receive more than 3 per cent. dividends, and the surplus can not, under any circumstances, accrue to his benefit within the next fifty years. This association, therefore, is not for individual profit, but for the raising of the standards of chemical industry and research in the United States. If we recognize what the *Verein zur Hebung der chemischen Industrie*, founded by Hoffmann and Werner Siemens, has done for

Germany, we may well hope for further fruits of this initiative here. Perhaps this building will house joint laboratories for the solution of questions affecting all manufactures alike; or experimental stations for the study of natural products not yet utilized; or a cooperative bureau of standardization for analytical methods; or a national welfare bureau for employees in chemical factories. This building does not owe its erection to some benevolent demigod, extending his protecting wing over people unable to care for themselves; it is a building by the chemists, of the chemists, and for the chemists. May it ever serve as an exemplar of unselfish patriotic cooperation!"

Pages 128-129: "... For, strange as it may seem to the layman, who has seen the ugliest blots on a landscape designated as chemical factories, who has sniffed with disgust a chemical odor, has been urged to believe that the chemist's shadow contaminates pure foods, and has been taught in school that alchemy spelled fraud and sorcery, our science is one calculated to develop the ideal side of human nature, and the chemist, more perhaps than the votary of natural science or the devotee of the so-called humanities, is led to an intense interest in human development. . . ."

Page 129: "... Our science aspires not only to know, but also to do. On the one hand, it leads us to delve into the secrets of nature, in the minute atom as well as in the far distant stars, in the living cell as well as in the crystallized relics of the convulsions from which this earth was born; on the other, it leads us to apply this knowledge to the immediate needs of man, be it in safeguarding his health, in ministering to his material or esthetic wants, or in regulating his commerce and in facilitating his utilization of the earth's resources. . . ."

"... There are two ways of aiding a man or a cause: by addition to the income or reduction of the expense. The pecuniary result to the beneficiary may be the same, but the moral one is far different; it is not only the beggar who is pauperized by the cash gift and uplifted by the aid which enables him to earn

his own livelihood. Arts and sciences may be stimulated by prizes and scholarships beyond a doubt, but the relation between donor and recipient is not free from restraint and the probability of human error in the selection of the right incumbent makes the method a wasteful one at best. . . ."

Part I. contains also his lectures on the "Fundamental Ideas of Physical Chemistry," "Osmotic Pressure," "Electrolytic Dissociation," "Atoms and Molecules," "Hypothesis of Radiant Matter," all models of clear exposition of difficult subjects.

The 170 pages of the second part of the volume relate exclusively to original experimental investigations carried out by Morris Loeb since 1885. His latest contribution "Studies in the Speed of Reductions" was read by him at the International Congress of Chemistry in 1912, a few days before his untimely death, which took him away in the prime of life, from his family and his many friends.

L. H. BAEKELAND

YONKERS, N. Y.

*Curious Lore of Precious Stones.* By GEORGE FREDERICK KUNZ. Philadelphia and London, J. B. Lippincott Company. 1913. Pp. xiv + 406. Six color plates, 22 double tones and 24 line cuts.

The object of this book, as stated in the preface, is to "indicate and illustrate the various ways in which precious stones have been used at different times and among different peoples, and more especially to explain some of the curious ideas and fancies which have gathered around them. Many of these ideas may seem strange to us now, and yet when we analyze them we find they have their roots either in some intrinsic quality of the stones or else in an instinctive appreciation of their symbolic significance. Through manifold transformations this symbolism has persisted to the present day."

To the interesting task thus outlined Dr. Kunz has brought a lifelong familiarity with gems, knowledge gained by the formation of several collections illustrating the folk-lore of precious stones and the possession of what is